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EXAMINER				
SHIN, KYUNG H				
ART UNIT		PAPER NUMBER		
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patent@sawyerlawgroup.com  
nikia@sawyerlawgroup.com

**Office Action Summary****Application No.**

10/706,231

**Applicant(s)**

HARIHARAN ET AL.

**Examiner**

KYUNG H. SHIN

**Art Unit**

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 31 January 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 28 - 39 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 28 - 39 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/CDC)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_
- Paper No(s)/Mail Date \_\_\_\_\_

### **DETAILED ACTION**

1. Application was filed on **11-12-2003**.
2. Claims **28 - 39** are pending. Claims **1 - 27** have been cancelled. Claims **28 - 39** are new. Claim **28** is independent.

### ***Response to Arguments***

3. Applicant's arguments, filed 1/31/2008, with respect to the rejection(s) of claim(s) 1-27 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of **Hebert et al.** (US Patent No. **6,134,618**) and **Yao et al.** (US PG PUB No. **20030126280**).

### ***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claim **35** is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The amended claim limitation, "return a null behavior to the congestion control application of the host processor when the selected

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congestion control algorithm is not supported", is not disclosed within the specification or original claims. The specification discloses that the function selected by the generic API may not be supported by the API interface and a null behavior is substituted. There is no disclosure for this particular amended result when selecting an unsupported algorithm. Appropriate correction is required.

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims **28 - 33, 37, 39** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Hebert et al.** (US Patent No. **6,134,618**) in view of **Yao et al.** (US PGPUb No. **20030126280**).

**Regarding Claim 28**, Hebert discloses a system for managing behavior of network processors, the system comprising:

a) a first of the network processors (Hebert col 2, ll 63-67: telecommunications switch (network processor) being of a different model or version from a second of the plurality of network processors; (Hebert col 3, ll 26-30; col 3, ll 46-55: universal (generic or non specific) API; col 3, l 61 - col 4, l 2: supports multiple protocol specific state machines; host to switch interface unchanged)

- b) a host processor (Hebert col 2, ll 56-63: host to switch interface for controlling telecommunications devices (network processors) application that manages network processors, the network processor is independent (Hebert col 3, ll 26-30; col 3, ll 46-55: generic API; no specific telecommunications switch (network processor); col 3, l 61 - col 4, l 2: supports multiple protocol specific state machines; host to switch interface unchanged) such that the application need not have specific knowledge of a network processor's hardware, software, or firmware in order to manage the network processor's behavior; (Hebert col 3, ll 39-45: standardized interface for application development) and
- c) a plurality of application programming interfaces (APIs) (Heber col 1, ll 22-27: multiple telecommunications switches; col 2, ll 56-63: host to switch API interface (multiple APIs)), each of the plurality of APIs being usable by the host processor to manage any of the plurality of network processors, none of the plurality of APIs being limited for use with a specific network processor model or version. (Hebert col 3, l 61 - col 4, l 2: supports multiple protocol specific state machines; host to switch interface unchanged; not limited to a specific telecommunications switch or network processor)

Yao discloses for a): a plurality of network processors controlling network traffic; for b): a congestion control application; the plurality of network processors for c): congestion control application. (Yao Figure 1 (30); para 005, ll 1-4: multiple network processors providing flow control; para 006, ll 1-11; para 007, ll 29-45: XOFF message processed when high watermark reached; XON message processed when

low watermark reached; congestion control method)

It would have been obvious to one of ordinary skill in the art to modify Hebert to use a congestion control application as taught by Yao. One of ordinary skill in the art would have been motivated to employ the teachings of Yao in order to use a XON/XOFF flow control scheme that prevents problems caused by HOL blocking such as increased system latency, unintentionally dropped packets, and time-out problems. (Yao para 030, ll 10-14: “ ... *The XON/XOFF flow control scheme prevents problems caused by HOL blocking such as increased system latency, unintentionally dropped packets, and time-out problems. Other advantages will be apparent to one of ordinary skill in the pertinent arts. ...* ”)

**Regarding Claim 29**, Hebert discloses the system of claim 28, wherein the application of the host processor need not be modified in order to add a new network processor model or version to the system. (Hebert col 3, ll 26-30; col 3, ll 46-55: universal (generic) API; col 3, l 61 - col 4, l 2: supports multiple protocol specific state machines; host to switch interface unchanged; col 3, ll 31-35: additional features to be added without implementing additional context specific signaling) Hebert does not explicitly disclose a congestion control application. However, Yao discloses a congestion control application. (Yao para 006, ll 1-11; para 007, ll 29-45: XOFF message processed when high watermark reached; XON message processed when low watermark reached; congestion control method)

It would have been obvious to one of ordinary skill in the art to modify Hebert to use a congestion control application as taught by Yao. One of ordinary skill in the art would have been motivated to employ the teachings of Yao in order to use a XON/XOFF flow control scheme that prevents problems caused by HOL blocking such as increased system latency, unintentionally dropped packets, and time-out problems. (Yao para 030, II 10-14)

**Regarding Claim 30**, Hebert discloses the system of claim 28, wherein the application of the host processor uses the plurality of APIs. (Hebert col 3, II 26-30; col 3, II 46-55: universal (generic) API; col 3, I 61 - col 4, I 2: supports multiple protocol specific state machines; host to switch interface unchanged) Hebert does not explicitly disclose a congestion control application, a plurality of network processors, and a location in network processor where behavior is to be managed. However, Yao discloses wherein a congestion control application (Yao para 006, II 1-11; para 007, II 29-45: congest control method), a plurality of network processors (Yao Figure 1 (30); para 005, II 1-4: multiple network processors providing flow control), and a location in network processor where behavior is to be managed. (Yao Figure 1 (30); para 005, II 1-4: multiple network processors providing flow control), and identify a location in network processors behavior is to be managed. (Yao para 006, II 1-11: congestion controlled at port (XON/XOFF port control mechanism))

It would have been obvious to one of ordinary skill in the art to modify Hebert to use a congestion control application, multiple network processors, and location to

control congestion as taught by Yao. One of ordinary skill in the art would have been motivated to employ the teachings of Yao in order to use a XON/XOFF flow control scheme that prevents problems caused by HOL blocking such as increased system latency, unintentionally dropped packets, and time-out problems. (Yao para 030, II 10-14)

**Regarding Claim 31**, Hebert discloses the system of claim 30. (Hebert col 3, II 26-30; col 3, II 46-55: universal (generic) API; col 3, I 61 - col 4, I 2: supports multiple protocol specific state machines; host to switch interface unchanged) Hebert does not explicitly disclose that one network processor includes an ingress side and an egress side. However, Yao discloses wherein the identified location in the one network processor includes an ingress side and an egress side. (Yao Figure 1 ((45); (50)); para 004, II 1-5: network processor; input port (ingress side), output port (egress side))

It would have been obvious to one of ordinary skill in the art to modify Hebert to use a network processor that includes an ingress side and an egress side as taught by Yao. One of ordinary skill in the art would have been motivated to employ the teachings of Yao in order to use a XON/XOFF flow control scheme that prevents problems caused by HOL blocking such as increased system latency, unintentionally dropped packets, and time-out problems. (Yao para 030, II 10-14)

**Regarding Claim 32**, Hebert discloses the system of claim 31. (Hebert col 3, II 26-30; col 3, II 46-55: universal (generic) API; col 3, I 61 - col 4, I 2: supports multiple protocol



specific state machines; host to switch interface unchanged) Hebert does not explicitly disclose that the ingress side of the identified location in the one network processor includes a plurality of ports, a plurality of receive queues, and a plurality of receive flows. However, Yao discloses wherein the ingress side of the identified location in the one network processor includes a plurality of ports, a plurality of receive queues, and a plurality of receive flows. (Yao Figure 1 ((45); (50))); para 004, ll 1-5: multiple ports; para 016, ll 1-8: receive (ingress) queues or flows)

It would have been obvious to one of ordinary skill in the art to modify Hebert to use a network processor that includes multiple ports and receive queues as taught by Yao. One of ordinary skill in the art would have been motivated to employ the teachings of Yao in order to use a XON/XOFF flow control scheme that prevents problems caused by HOL blocking such as increased system latency, unintentionally dropped packets, and time-out problems. (Yao para 030, ll 10-14)

**Regarding Claim 33,** Hebert discloses the system of claim 31. (Hebert col 3, ll 26-30; col 3, ll 46-55: universal (generic) API; col 3, l 61 - col 4, l 2: supports multiple protocol specific state machines; host to switch interface unchanged) Hebert does not explicitly disclose a plurality of scheduler flows, a plurality of scheduler queues, a plurality of transmit queues, and a plurality of ports. However, Yao discloses wherein the egress side of the identified location in the one network processor includes a plurality of scheduler flows, a plurality of scheduler queues (Yao para 016, ll 8-12: scheduler arbiter (schedule flows)), a plurality of transmit queues (Yao para 016, ll 1-8: virtual output;

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transmit queues), and a plurality of ports (Yao Figure 1 ((45); (50)); para 004, ll 1-5: multiple ports).

It would have been obvious to one of ordinary skill in the art to modify Hebert to use a plurality of scheduler flows, a plurality of scheduler queues, a plurality of transmit queues, and a plurality of ports as taught by Yao. One of ordinary skill in the art would have been motivated to employ the teachings of Yao in order to use a XON/XOFF flow control scheme that prevents problems caused by HOL blocking such as increased system latency, unintentionally dropped packets, and time-out problems. (Yao para 030, ll 10-14)

**Regarding Claim 37**, Hebert discloses the system of claim 28, wherein the network processor resides in a switch or a router. (Hebert col 2, ll 63-67: telecommunications switch controlled by generic API) Yao does not explicitly disclose a plurality of network processors. However, Yao discloses wherein a plurality of network processors. (Yao para 005, ll 1-4: multiple network processors providing flow control (congestion))

It would have been obvious to one of ordinary skill in the art to modify Hebert to use a plurality of network processors as taught by Yao. One of ordinary skill in the art would have been motivated to employ the teachings of Yao in order to use a XON/XOFF flow control scheme that prevents problems caused by HOL blocking such as increased system latency, unintentionally dropped packets, and time-out problems. (Yao para 030, ll 10-14)

**Regarding Claim 39**, Hebert discloses the system of claim 28. (Hebert col 3, ll 26-30; col 3, ll 46-55: universal (generic) API; col 3, l 61 - col 4, l 2: supports multiple protocol specific state machines; host to switch interface unchanged) Hebert does not explicitly disclose how packets are handled when the network processor is unable to process every packet during a particular interval. However, Yao discloses wherein congestion and avoidance behavior of a network processor includes how packets are handled by the network processor when the network processor is unable to process every packet during a particular interval. (Yao para 030, ll 10-14: prior art invention substantially eliminates HOL block; HOL blocking occurs if prior art cannot successfully handle congestion problem or process every packet)

It would have been obvious to one of ordinary skill in the art to modify Hebert for how packets are handled when the network processor is unable to process every packet as taught by Yao. One of ordinary skill in the art would have been motivated to employ the teachings of Yao in order to use a XON/XOFF flow control scheme that prevents problems caused by HOL blocking such as increased system latency, unintentionally dropped packets, and time-out problems. (Yao para 030, ll 10-14)

8. Claims **34 - 36, 38** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Hebert-Yao** and further in view of **Jarvis et al.** (US Patent No. **5,870,561**)

**Regarding Claim 34**, Hebert discloses the system of claim 30, wherein the application of the host processor uses the plurality of APIs. (Hebert col 3, ll 26-30; col 3, ll 46-55:

universal (generic) API; col 3, l 61 - col 4, l 2: supports multiple protocol specific state machines; host to switch interface unchanged)

Hebert does not explicitly disclose congestion control to apply at the identified location in the one network processor. However, Yao discloses wherein congestion controls to apply at the identified location in the one network processor. (Yao para 006, ll 1-11: XON/XOFF flow control algorithm; identified location is port)

It would have been obvious to one of ordinary skill in the art to modify Hebert to apply congestion control at the identified location in the one network processor as taught by Yao. One of ordinary skill in the art would have been motivated to employ the teachings of Yao in order to use a XON/XOFF flow control scheme that prevents problems caused by HOL blocking such as increased system latency, unintentionally dropped packets, and time-out problems. (Yao para 030, ll 10-14)

Hebert-Yao does not explicitly disclose selecting a congestion control algorithm. However, Jarvis discloses wherein to select a congestion control algorithm. (Jarvis col 3, ll 15-27: select congestion control algorithm)

It would have been obvious to one of ordinary skill in the art to modify Hebert-Yao to select a congestion control algorithm as taught by Jarvis. One of ordinary skill in the art would have been motivated to employ the teachings of Jarvis in order not overload certain network links, particularly during periods of peak usage by restricting the use of selected network links based on the type and priority of the network traffic. (Jarvis col. 2, lines 20-27: " ... Moreover, the large volume of network traffic generated by

*application programs often overloads certain network links, particularly during periods of peak usage. This type of overloading may interfere with significant network traffic, such as file server and print server operations. Consequently, some network administrators would prefer to restrict the use of selected network links based on the type and priority of the network traffic serviced over the links. ...")*

**Regarding Claim 35**, Hebert discloses the system of claim 34 wherein the plurality of APIs by the network processor (Hebert col 3, ll 26-30; col 3, ll 46-55: universal (generic) API; col 3, l 61 - col 4, l 2: supports multiple protocol specific state machines; host to switch interface unchanged). Hebert does not explicitly disclose a congestion control application. However, Yao discloses a congestion control application. (Yao para 006, ll 1-11; para007, ll 29-45: XOFF message processed when high watermark reached; XON message processed when low watermark reached; congestion control method)

It would have been obvious to one of ordinary skill in the art to modify Hebert to use a congestion control application as taught by Yao. One of ordinary skill in the art would have been motivated to employ the teachings of Yao in order to use a XON/XOFF flow control scheme that prevents problems caused by HOL blocking such as increased system latency, unintentionally dropped packets, and time-out problems. (Yao para 030, ll 10-14)

Hebert-Yao does not explicitly disclose returning a null behavior to the application of the host processor when the selected algorithm is not supported. However, Jarvis discloses wherein returning a null behavior to the application of the host processor

when the selected algorithm is not supported. (Jarvis col 3, ll 15-27: selection of policy for processing network traffic (congestion control policy); specification does not disclose null behavior in return for unsupported congestion control algorithm (see 112 rejection))

It would have been obvious to one of ordinary skill in the art to modify Hebert to select a congestion control algorithm (no null behavior discloses in specification) as taught by Jarvis. One of ordinary skill in the art would have been motivated to employ the teachings of Jarvis in order not overload certain network links, particularly during periods of peak usage by restricting the use of selected network links based on the type and priority of the network traffic. (Jarvis col. 2, lines 20-27)

**Regarding Claim 36**, Hebert discloses the system of claim 28 wherein the plurality of APIs. (Hebert col 3, ll 26-30; col 3, ll 46-55: universal (generic) API; col 3, l 61 - col 4, l 2: supports multiple protocol specific state machines; host to switch interface unchanged) Hebert does not explicitly disclose a configure API, an update API, an enable API, a disable API, and a list API.

However, Jarvis discloses:

- a) the configure API being usable by the congestion control application of the host processor to configure the congestion and avoidance behavior of any of the plurality of network processors, (Jarvis col 5, ll 63-66: set programmable threshold limits for congestion control (configure))
- b) the update API being usable by the congestion control application of the host processor to update the congestion and avoidance behavior of any of the

plurality of network processors, (Jarvis col 5, ll 63-66: change  
(update)congestion control information (policies))

- c) the enable API being usable by the congestion control application of the host processor to enable congestion control algorithms for any of the plurality of network processors; the disable API being usable by the congestion control application of the host processor to disable congestion control algorithms for any of the plurality of network processors, (Jarvis col 4, ll 57-61: enable/disable policy (congestion control capability)) and
- d) the list API being usable by the congestion control application of the host processor to view congestion and avoidance information concerning any of the plurality of network processors. (Jarvis col 4, ll 65-67: view (list) congestion control policies))

It would have been obvious to one of ordinary skill in the art to modify Hebert to use a configure API, an update API, an enable API, a disable API, and a list API as taught by Jarvis. One of ordinary skill in the art would have been motivated to employ the teachings of Jarvis in order not overload certain network links, particularly during periods of peak usage by restricting the use of selected network links based on the type and priority of the network traffic. (Jarvis col. 2, lines 20-27)

**Regarding Claim 38**, Hebert discloses the system of claim 28. (Hebert col 3, ll 26-30; col 3, ll 46-55: universal (generic) API; col 3, l 61 - col 4, l 2: supports multiple protocol specific state machines; host to switch interface unchanged) Hebert does not explicitly

disclose a plurality of network processors to control network traffic. However, Yao discloses wherein a plurality of network processors to control network traffic. (Yao Figure 1 (30); para 005, ll 1-4: multiple network processors providing flow control)

It would have been obvious to one of ordinary skill in the art to modify Hebert to use a plurality of network processors to control network traffic as taught by Yao. One of ordinary skill in the art would have been motivated to employ the teachings of Yao in order to use a XON/XOFF flow control scheme that prevents problems caused by HOL blocking such as increased system latency, unintentionally dropped packets, and time-out problems. (Yao para 030, ll 10-14)

Hebert-Yao does not explicitly disclose a plurality of networks. However, Jarvis discloses a plurality of networks. (Jarvis col 4, ll 35-49: WAN (wide area network); multiple interconnected LANs)

It would have been obvious to one of ordinary skill in the art to modify Hebert to use a plurality of networks as taught by Jarvis. One of ordinary skill in the art would have been motivated to employ the teachings of Jarvis in order not overload certain network links, particularly during periods of peak usage by restricting the use of selected network links based on the type and priority of the network traffic. (Jarvis col. 2, lines 20-27)



***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **KYUNG H. SHIN** whose telephone number is (571)272-3920. The examiner can normally be reached on 9:30 am - 6 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Nathan J. FLYNN** can be reached on (571) 272-1915. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Kyung Hye Shin  
Examiner  
Art Unit 2143

KHS  
4/13/2008

/Nathan J. Flynn/

Supervisory Patent Examiner, Art Unit 2154